

# (12) United States Patent Kanca, III

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## (54) THREE PART DENTAL BONDING COMPOSITIONS AND METHODS OF USE

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- (58) Field of Classification Search ............... 433/228.1; 523/116, 118

See application file for complete search history.

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#### (57)**ABSTRACT**

Three part bonding compositions that include an etching solution, a preparative solution, and a curable composition, as well as packaged products and methods of use for the treatment of bone substrate, i.e., teeth, are described. The etch solutions generally include an inorganic acid, an organic acid, an ethylenically unsaturated functional monomer and, optionally a solvent, and water. The preparative solutions generally include an ethylenically unsaturated functional monomer, at least one polyethylenically unsaturated functional crosslinking monomer, a photo initiator, and at least one solvent. The curable composites include reactive monomers and crosslinking agents that are effective to adhere to the surface of the treated substrate. The methods of the invention provide the ability to modify a bone or bone-like surface so that the curable composition, such as an adhesive resin, can be used in combination with a restorative material.

## 17 Claims, No Drawings